

Appendix 10.5 - Event Tree Analysis

E01 Gasholder Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)	
Gasholder Release (size = 1,600m ³)	Leak, 300mm hole (~ 18.4kg/s) 5.59E-04	Immediate		Jet Fire	1.96E-05	
		Delay	Yes	VCE	2.35E-06	
			No	Flash Fire	1.72E-05	
		No		No Consequence	5.20E-04	
	Rupture (release quantity = 1,600m ³) 3.01E-05	Immediate		Fire Ball	4.52E-06	
		Delay	Yes	VCE	1.35E-06	
			No	Flash Fire	3.16E-06	
		No		No Consequence	2.11E-05	
				0.12		
				0.88		

Note: There are 3 nos. of gasholders on-duty with 1,600m³ each.

Appendix 10.5 - Event Tree Analysis

E02 Digester Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)	
Digester Release (biogas volume = 330m ³)	Leak, 300mm hole (~ 18.1kg/s) 7.59E-04	Immediate		Jet Fire	2.66E-05	
		Delay	Yes	VCE	3.19E-06	
			No	Flash Fire	2.34E-05	
		No		No Consequence	7.06E-04	
	Rupture (release quantity = 330m ³) 5.01E-05	Immediate		Fire Ball	7.52E-06	
		Delay	Yes	VCE	2.25E-06	
			No	Flash Fire	5.26E-06	
		No		No Consequence	3.51E-05	
				0.12		
				0.88		

Note: There are 5 nos. of digesters on-duty with 330m³ each.

Appendix 10.5 - Event Tree Analysis

E03 Sulphur Absorption Vessel Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)	
Sulphur Absorption Vessel Release (size = 50m ³ of methane)	Leak, 10mm hole (~ 0.02kg/s) 3.59E-04	Immediate		Jet Fire	1.79E-06	
		Delay	Yes	VCE	7.17E-08	
			No	Flash Fire	1.72E-06	
		No		No Consequence	3.55E-04	
	Rupture (release quantity = 50m ³) 1.01E-05	Immediate		Fire Ball	1.52E-06	
		Delay	Yes	VCE	4.55E-07	
			No	Flash Fire	1.06E-06	
		No		No Consequence	7.07E-06	

Note: There is 1 no. of sulphur absorption vessels on-duty with 50m³ each.

Appendix 10.5 - Event Tree Analysis

E04 Aboveground Piping Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)
Aboveground Piping Release	Leak, 15mm hole (~ 0.05kg/s) 4.49E-04	Immediate		Jet Fire	2.25E-06
		Delay 0.005	Yes 0.04	VCE	8.99E-08
			No 0.96	Flash Fire	2.16E-06
		No 0.99		No Consequence	4.45E-04
	Rupture, 150mm dia. (~4.6kg/s) 6.80E-05	Immediate		Jet Fire	2.38E-06
		Delay 0.035	Yes 0.12	VCE	2.85E-07
			No 0.88	Flash Fire	2.09E-06
		No 0.93		No Consequence	6.32E-05

Note: 140m length of DN150 aboveground pipeline is assumed.